Estimating Weekly Petroleum Inventory Using both Weekly and Monthly Data

EIA publishes "Stocks of Crude Oil and Petroleum Products" weekly and monthly at
http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/weekly_petroleum_stat
us_report/current/pdf/table03.pdf . All components of "Monthly Other Oils " stocks are
collected from all respondents in a census. In order to present more timely "Other Oils"
stocks, the "Weekly Other Oils" stocks are estimated from the "Monthly Other Oils"
stocks. Due to the seasonality and other unexpected disruptions, there are some
discrepancies between these two series.

Background on relationship between weekly and monthly petroleum supply surveys:

7 categories of petroleum products – Total Motor Gasoline, Distillate Fuel Oil, Residual
Fuel Oil, Jet Fuel, Unfinished Oils, Other Oils, and Propane/Propylene - are shown for
both the weekly survey and monthly census.

Stocks of Petroleum Products
= Stocks of Total Motor Gasoline + Stocks of Total Distillate Fuel Oil
+ Stocks of Residual Fuel Oil + Stocks of Total Jet Fuel
+ Stocks of Unfinished Oils + Stocks of Propane/Propylene
+ Stocks of Other Oils

All oil products are reported in the monthly census; where the monthly number is wthat
we compare the estimate we obtain from the weekly survey aggregated to a month
(known as "monthly-from-weekly") to the estimate from the monthly survey. We do not
collect all components of "Other Oils stocks" weekly.

Data collected from the Weekly Petroleum Supply Reporting System (WPSRS) are used
to develop estimates of the most current monthly quantities (estimates are referred to as
"monthly-from-weekly"). The data shown in Table 3 in the URL are, "Week-Ending
Stocks", estimates based on weekly data collected on the following forms:

Form number	Name
EIA-800	"Weekly Refinery Report"
EIA-801	"Weekly Bulk Terminal Report"
EIA-802	"Weekly Product Pipeline Report"
EIA-803	"Weekly Crude Oil Stocks Report"
EIA-804	"Weekly Import Report"
EIA-807	"Weekly Propane Report"

The sampling procedure used for the weekly system is the cut-off method.

The monthly stock figures are not cumulative but represent inventories as the last day of
the reporting period. When the reporting week does not coincide with the end of a

reporting month, an interpolation is necessary to derive a monthly-from-weekly figure for end-of-month stocks. However, there are monthly survey forms that correspond with the weekly surveys:

Form number	Name
EIA-810	"Monthly Refinery Report"
EIA-811	"Monthly Bulk Terminal Report"
EIA-812	"Monthly Product Pipeline Report"
EIA-813	"Monthly Crude Oil Stocks Report"
EIA-814	"Monthly Import Report"

The monthly system is a census, and the data shown in Table 3 in the URL are, "monthly data" collected from the above forms. The monthly stocks of all components of oil products are reported in the attached data set. Since all the components of the Other Oils product are only collected on the monthly basis, "estimation of weekly other oils stocks" is a challenge in preparing the weekly report.

Problem: In order to present more timely "Other Oils" stocks, the "Weekly Other Oils" stocks are estimated from the "Monthly Other Oils" stocks. We want to determine the best way to estimate weekly stocks of Other Oils excluding propane (based on weekly data for major oil products, plus monthly data for major oil products and Other Oils products) and to evaluate alternative methods by comparing the estimate to monthly data.

Available data: Please see the attached file of the monthly stocks of all components of oil products reported from 19983 to 2003 and the weekly stocks of 7 categories of petroleum products reported from 19938 to 2003.

Proposed work:

1. Implement the capability to modify any of the data elements that are obtained from monthly data in the new weekly system, which is scheduled for implementation in the first week of April 2004. Collect weekly propane data in the new weekly system starting April 2004, which will eliminate a very volatile component of the Other Oils stock.

2. Employ a new methodology to calculate the expected Other Oils stocks, as well as any other critical estimated numbers.

Questions to ASA Energy Committee:

What is the criterion to decide the best estimate of weekly Other Oils stocks?
The least sum of absolute deviation? The least sum of squared errors?

What is the best way to estimate weekly "Other Oils stocks"?